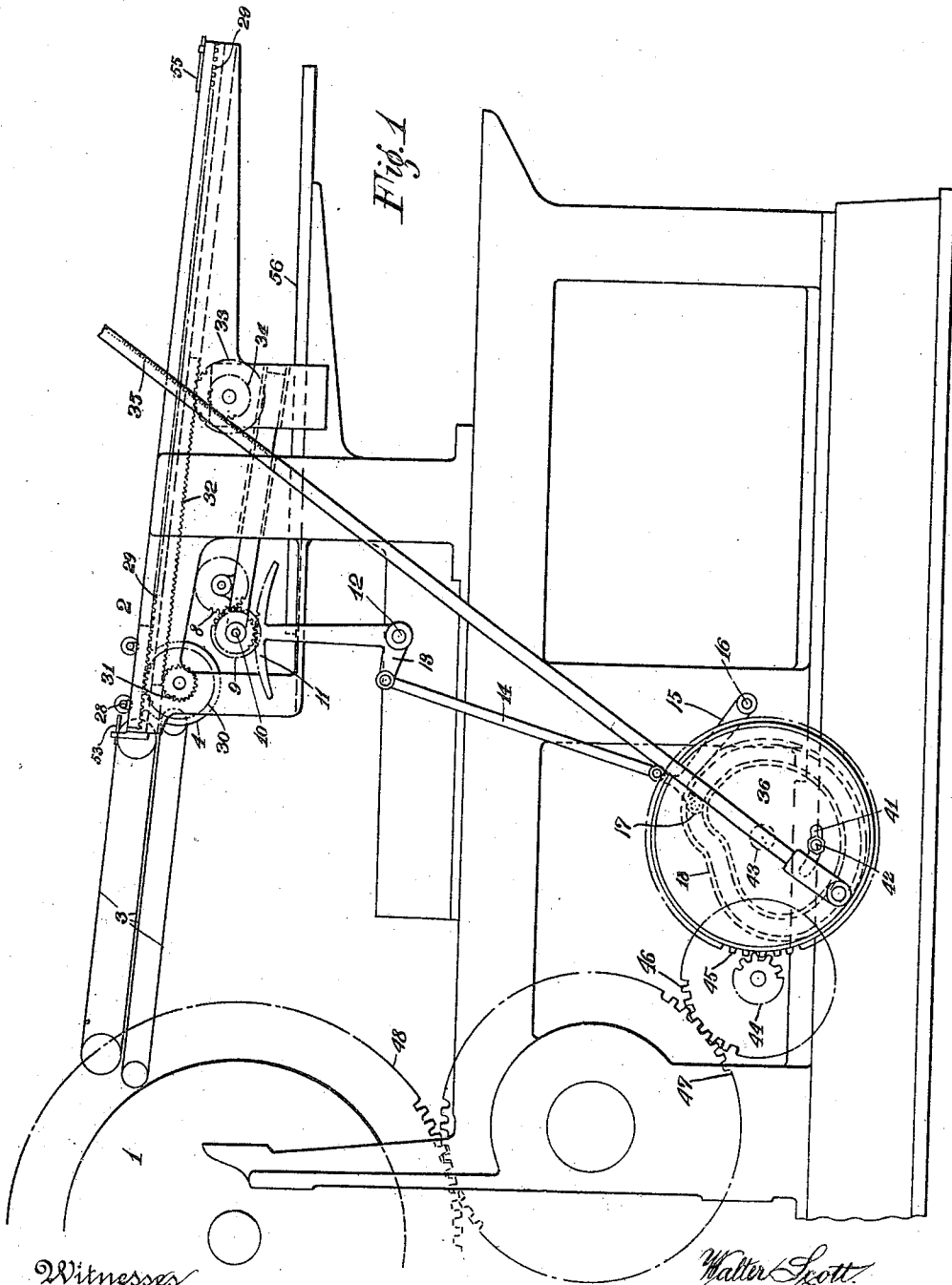


W. SCOTT, DEC'D.
I. & D. J. SCOTT, EXECUTORS.
DELIVERY MECHANISM.
APPLICATION FILED MAY 23, 1904.

971,220.

Patented Sept. 27, 1910.
4 SHEETS—SHEET 1.



Witnesses
Evan Honigsberg
Anne W. Rosenbaum

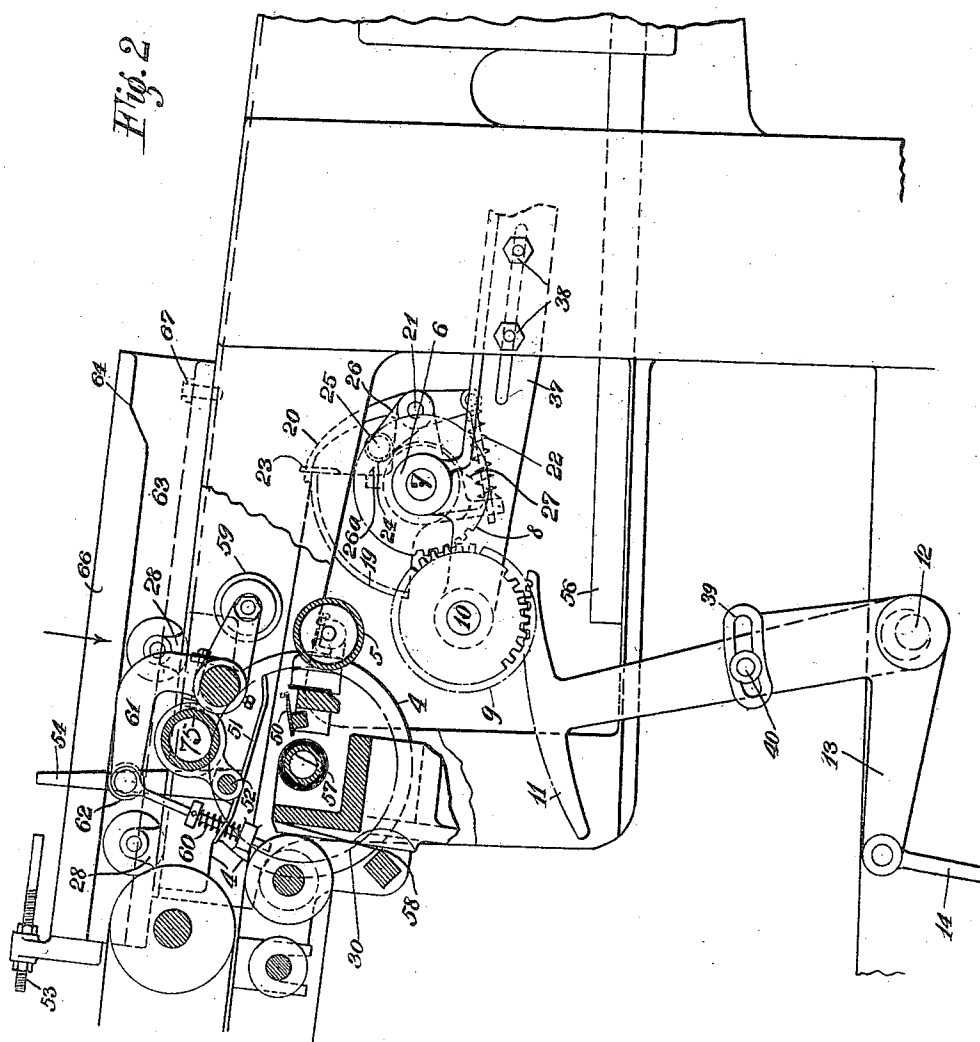
Walter Scott
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4 SHEETS-SHEET 2.



WITNESSES:

Ivan Honigsberg
Annie Weissmann

Walter Scott INVENTOR

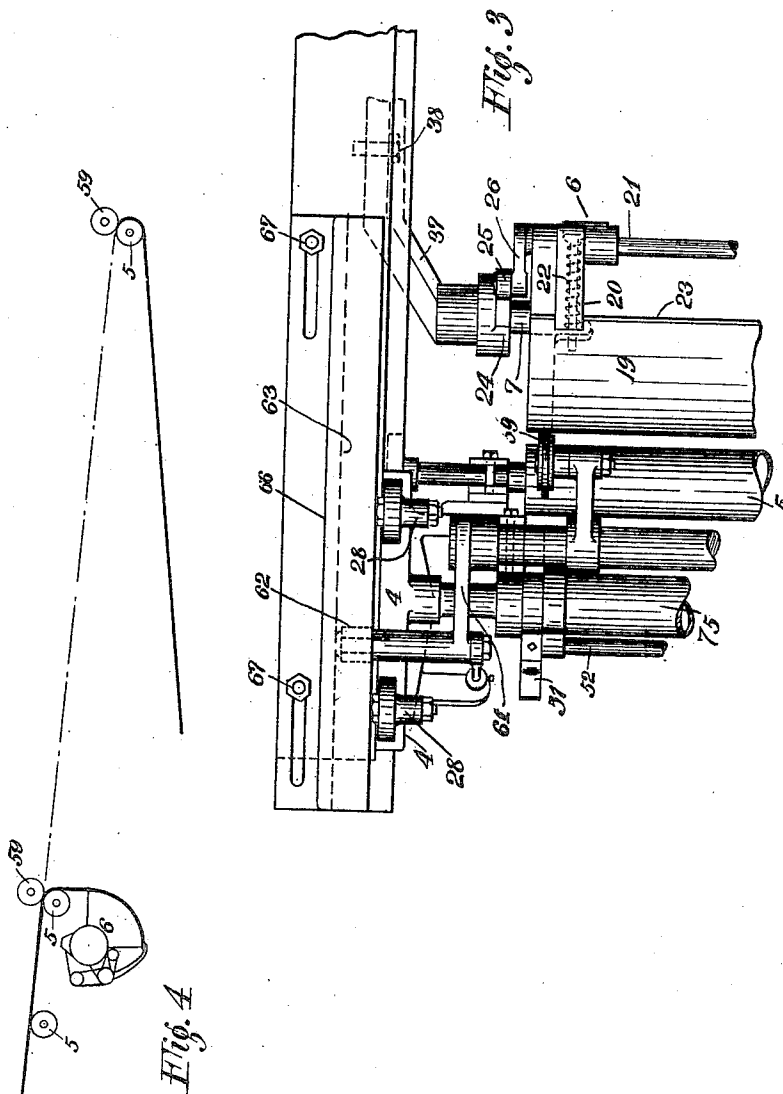
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4 SHEETS—SHEET 3.



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4 SHEETS-SHEET 4.

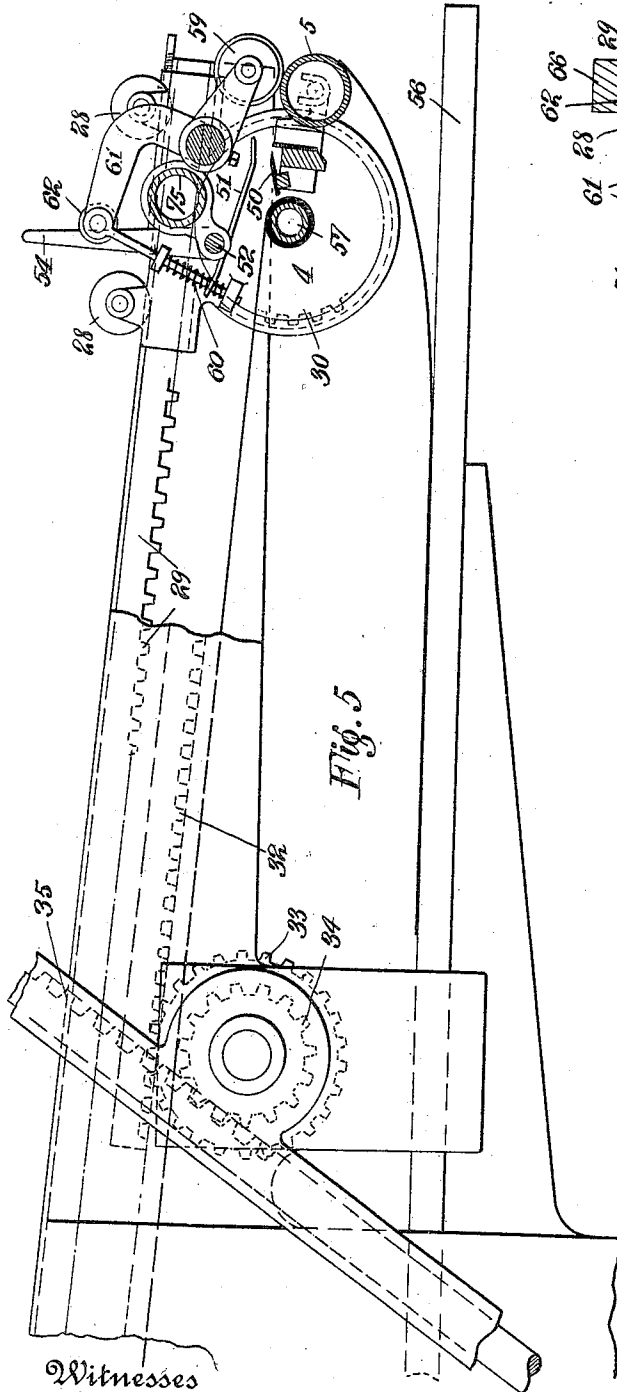


Fig. 5

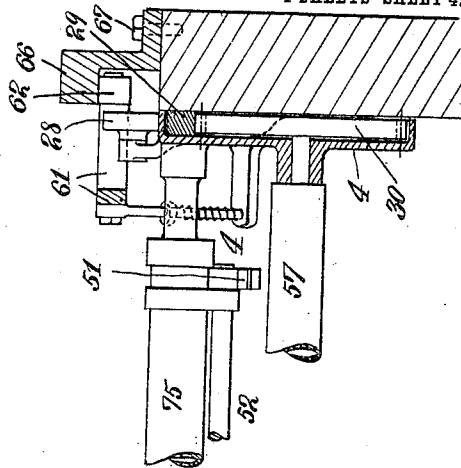


Fig. 6

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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY; ISABELLA SCOTT AND DAVID JOHN SCOTT EXECUTORS OF WALTER SCOTT, DECEASED.

DELIVERY MECHANISM.

971,220.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed May 23, 1904. Serial No. 209,148.

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States of America, and a resident of Plainfield, Union county, New Jersey, have invented certain new and useful Improvements in Delivery Mechanism, of which the following is a specification.

My invention relates generally to delivery mechanisms for sheets of paper or other flexible material, and has more particular reference to sheet delivery mechanism used in printing presses.

In the class of printing machines known as "two-revolution," "stop cylinder" and similar machines, the printed sheets are generally delivered with the printed side up, sometimes, however, it is desirable to deliver the sheets with the printed side down. Furthermore, it is frequently desired to change from one style of delivery to another in the same machine, when doing different classes of work.

The object of my invention is to produce a structure of the character described, capable of delivering the sheet with the printed side down, and also to provide interchangeable means whereby the sheet can be delivered either with the printed side up or down at will in the same machine.

In a companion application filed on the 17th of February, 1904, Ser. No. 194,025, I showed a structure characterized by a reciprocating sheet turning means, and a gripping mechanism for turning the leading edge of the sheet whose location is fixed with relation to the reciprocating sheet turning means and extraneous of the same. The gripping mechanism was described as being either rotating or oscillating, but was specifically shown as rotating. In the present application, I have shown an oscillating gripping mechanism associated with a reciprocating sheet turning means, but located extraneously of the latter.

Other features of construction and combination of parts will appear as the specification proceeds.

In the drawings, I have embodied my invention in a suitable form, but changes of construction can of course be made and elements omitted, without departing from the spirit of the invention.

In the said drawings: Figure 1 is a view of a structure embodying my invention showing the general arrangement of parts

and gearing. Fig. 2 is a detail view of the reciprocating sheet turning means, oscillating gripping mechanism, and adjacent parts. Fig. 3 is a plan view of some of the parts shown in Fig. 2. Fig. 4 is a diagrammatic view showing how the sheet is turned. Fig. 5 is an elevation, partly in section, showing the reciprocating carriage and adjacent elements in the extreme forward position. Fig. 6 is a vertical transverse sectional view through the frame and carriage.

Similar characters of reference indicate corresponding parts in the different views.

1 indicates the impression cylinder of a printing machine, and 2 the delivery mechanism for the same. Interposed between the said impression cylinder and the delivery mechanism are tapes 3, or other means for conveying the sheet. The delivery mechanism comprises essentially a reciprocating carriage 4, reciprocating sheet turning means 5, and a gripping mechanism 6 which may either oscillate or rotate, but which in the present instance oscillates, located extraneously of the sheet turning means and reciprocating carriage.

The gripping mechanism is, in the present instance, constructed as follows: A shaft 7 is oscillated in any suitable way as by means of the gear 8 meshing with the gear 9, mounted on the stud 10, which receives its motion from the segment 11 mounted on the stud 12, operated by means of the bell crank 13, attached by means of the rod 14 to the lever 15, pivoted at 16 and carrying the roll 17 operated by the cam 18. The shaft 7 carries a segment of a cylinder 19 carrying the grippers proper 20, pivoted at 21, and normally held closed by means of the spring 22. In this instance, the registering plate 23 against which the sheet strikes is also carried by the grippers 20. On the framework is a stationary cam 24 engaging with the roller 25 carried by the arm 26, mounted on the cylinder segment and moving with the same. As the gripping mechanism oscillates, the roller 25 coming in contact with the high surfaces 26^a and 27 of the cam, will open the said gripper at the points where the sheet is received and released by the said gripping mechanism.

The reciprocating carriage is operated in any suitable way and runs on the hangers 28 traveling on the framework. The specific means for operating this reciprocating car-

riage and consequently the sheet turning means comprise fixed racks 29 in the framework with which engage the gears 30 (only one of which is seen) moving with the pinion 31 to which motion is imparted by the sliding rack 32 meshing with the gear 33 which receives its motion from the gear 34 meshing with the rack 35. The rack 35 is attached to the disk 36.

- 10 The shaft 7 (and therefore the oscillating gripping mechanism) and the stud 10 are both adjustable by being mounted on the adjustable brackets 37 removably attached to the framework by means of the bolts 38.
- 15 The segment 11 is likewise adjustable by means of the slotted portion 39 and bolt 40. Finally the cam 18 and disk 36 are adjustable by means of the slot 41 and bolt 42.

- 20 The shaft 43 which carries the cam 18 and disk 36 is timed so as to operate the delivery once to every two revolutions of the impression cylinder 1, and for other styles of machines once to each sheet printed, or if a collecting cylinder is used, once to every pack of sheets collected. In the present instance, the shaft 43 receives its motion by means of the pinion 44, and gears 45, 46, 47, and 48.

- 30 On the reciprocating carriage is, as previously pointed out, sheet turning means of any suitable form as the roller 5. This carriage is further provided with a sheet holding means taking the form, in the present instance, of two opposed grippers 50 and 51, the latter of which is mounted on the stud 52, supported by the transverse rod 75 connecting the two sides of the carriage 4, and is adapted to be closed by the fixed stop 53 acting against the arm 54 also mounted on the stud 52 and to be opened by the other fixed stop 55.

- 40 The operation of the device is as follows: When it is desired to deliver the sheets with the printed side down, the disk 36 is adjusted so that the carriage 4 is retarded, so that it will be in about the position shown in the drawings, when the leading edge of the sheet reaches the grippers. The arm 54 is removed, or the stops 53 and 55 are removed, or the grippers 50 and 51 otherwise rendered inoperative, so that the said grippers will remain open and allow the sheet to pass to the oscillating gripping mechanism 6. The said gripping mechanism 6 will have commenced its movement when the sheet strikes the registering plate 23 and the said gripping mechanism will then, by the means hereinbefore described, nip the sheet and move downward and out of the way of the carriage 4. When the reciprocating carriage moves forward, the roller 5 or other sheet turning means will pass in between the sheet and the gripping mechanism 6, and will turn the sheet over, by pushing against the underside of the said sheet as illustrated

in Fig. 4. After the oscillating gripping mechanism has moved about one-half a circle, the cam 24 will open the gripping mechanism and allow the sheet to drop. The gripping mechanism will then move back to its uppermost position by the action of the segment 11 moving in the opposite direction. By this means the sheet will drop with the printed side down on the receiving board 56. To accommodate the different lengths of sheets the brackets 37 and segment 11 are adjusted in the manner previously specified.

When it is desired to deliver the sheets with the printed side up, the parts will be so arranged that the carriage 4 will be in about the position occupied by the gripping mechanism 6 in the drawings when the leading edge of the sheet reaches the grippers 50 and 51. The stops 53 and 55 are placed in position and the sheet turning means 5 are removed as is also the oscillating gripping mechanism, or the said elements are otherwise rendered inoperative. As the reciprocating carriage comes to the end of its return stroke the leading edge of the sheet enters the bite of the grippers 50 and 51, which latter are then closed by the stop 53 acting through the arm 54 so as to seize the sheet. On the forward stroke of the carriage the grippers 50 and 51 will remain closed by reason of the weight of arm 54 so as to carry the sheet with them, and the web or apron fastened with its free end at 58 and mounted on the roller 57 will be drawn out so as to support the sheet. As the carriage comes to the end of its forward stroke the grippers 50 and 51 will be opened by the stop 55 acting against 54 thereby releasing the sheet. On the return of the carriage the apron or web will rewind thereby allowing the sheet to drop on the delivery board with the printed side up.

When the sheet is to be delivered with the printed side down, and consequently has to be turned over, I sometimes find it advantageous to positively remove the sheet from the bite of the oscillating gripping mechanism so that the latter may be free to turn back and assume its uppermost position. This I accomplish by mounting on the reciprocating carriage a roller or a plurality of disks 59 which are normally held out of contact with the roller 5 by means of the friction roll 62 attached to the arm 61 attached to the said roller or disks 59. The cam groove 63 is so positioned that when the oscillating gripping mechanism has moved the distance of a half a circle to its lowermost position, the friction roll will come opposite to the point 64 in the said cam groove which will cause the disks 59 to contact with the roller 5 by the action of the spring 60, thus nipping the sheet between the said roller 5 and the disks 59. As this

roller 5 will rotate at a speed which is less than the speed of the reciprocating movement, the sheet will be forcibly removed out of the bite of the oscillating gripping mechanism 6 and the sheet turned over by the co-
 5 operation of the roller 5 and disks 59.

The cam groove 63 is located in the cam 66 which is adjustably secured to the framework by means of the bolt 67.

10 It will thus be seen that when the reciprocating carriage is used to draw the sheet out with the printed side up that the sheet is delivered onto the delivery board on the return stroke of the carriage, and that if the
 15 sheet is turned over by the means hereinbefore described to deliver it with the printed side down, it is delivered onto the delivery board on the forward stroke of the carriage.

What I claim is:

20 1. In a printing or other machine, the combination with a reciprocating carriage, of an oscillating gripping mechanism located extraneously of the said carriage and adapted to receive the sheet and turn over
 25 the leading edge of the same, and a sheet turning means on the carriage adapted to act against the underside of the sheet so as to turn over the body of the same.

30 2. In a printing or other machine, the combination with a reciprocating carriage, of means for delivering the sheet with the printed side up, means for delivering the sheet with the printed side down, comprising, a sheet turning means carried by the
 35 reciprocating carriage, and an oscillating gripping mechanism located extraneously of the reciprocating carriage for turning the leading edge of the sheet, the means for delivering the sheet with the printed side up,
 40 and means for delivering the sheet with the printed side down being interchangeable.

45 3. In a printing or other machine, the combination with a reciprocating carriage, of an oscillating gripping mechanism located extraneously of the said carriage and adapted to receive the sheet and turn over
 50 the leading edge of the same, a sheet turning means on the carriage adapted to act against the underside of the sheet so as to turn over the body of the same, and means whereby the reciprocating carriage will deliver the sheets
 with the printed side up at will.

55 4. In a printing or other machine, the combination with a reciprocating carriage, of an oscillating gripping mechanism located extraneously of the said carriage and adapted to receive the sheet and turn over
 60 the leading edge of the same, a sheet turning means on the carriage adapted to act against the underside of the sheet so as to turn over the body of the same, and grippers on the reciprocating carriage adapted to be used in
 65 place of the gripping mechanism and sheet turning means whereby the sheet can be delivered with the printed side up.

5. In a printing or other machine, the combination of a reciprocating carriage, an oscillating sheet turning means located underneath the plane in which the carriage
 70 travels but adapted to project into the plane thereof to seize the sheet and turn the leading edge of the same, and means moving with the reciprocating carriage passing under the body of the sheet to turn over the
 75 same.

6. In a printing or other machine, the combination with a reciprocating carriage, of a sheet turning means carried by the same, an oscillating gripping mechanism located in the path of the reciprocating carriage located extraneously of the same, means
 80 for moving the gripping mechanism out of the path of the reciprocating carriage before the latter moves forward, means for causing the gripping mechanism to seize the
 85 sheet so as to turn the leading edge of the sheet over, the sheet turning means on the carriage turning over the body of the same as it advances, and the gripping mechanism releasing the sheet when it has been turned.
 90

7. In a printing or other machine, the combination with a reciprocating carriage having sheet turning means, of an oscillating gripping mechanism located extraneously of the said carriage for turning the
 95 leading edge of the sheet, a cam stationary on the framework, a spring for normally keeping the gripping mechanism closed, a friction roll on the gripping mechanism adapted to engage with the said cam and
 100 adapted to open the gripping mechanism when it arrives at the limit of its oscillating motion in either direction.

8. In a printing or other machine, the combination of a gripping mechanism for
 105 turning the leading edge of a sheet, and means for turning over the body of the sheet, and forcibly removing the leading edge thereof from the bite of the gripping mechanism after the latter has turned the said
 110 leading edge.

9. In a printing or other machine, the combination of an oscillating gripping mechanism for turning the leading edge of a sheet, and means for turning over the body of
 115 the sheet, and forcibly removing the leading edge thereof from the bite of the gripping mechanism after the latter has turned the said leading edge.

10. In a printing or other machine, the combination with a reciprocating roller for
 120 turning over the sheet, of a gripping mechanism located extraneously of the same for turning the leading edge of the sheet, a pivoted friction roll or rolls adjacent to the reciprocating roll and moving with the latter,
 125 and means for causing the friction roll or rolls to engage with the reciprocating roll so as to feed out the sheet between the two as it is turned over.

11. In a printing or other machine, the combination with a reciprocating roller for turning over the sheet, of an oscillating gripping mechanism located extraneously of the same for turning the leading edge of the sheet, a pivoted friction roll or rolls adjacent to the reciprocating roll and moving with the latter, and means for causing the friction roll or rolls to engage with the reciprocating roll so as to feed out the sheet between the two as it is turned over.

12. In a printing or other machine, the combination with a reciprocating roller for turning over the sheet, of a gripping mechanism located extraneously of the same for turning the leading edge of the sheet, a pivoted friction roll or rolls adjacent to the reciprocating roll and moving with the latter, and a cam for causing the friction roll or rolls to engage with the reciprocating roll so as to feed out the sheet between the two as it is turned over.

13. In a printing or other machine, the combination with a reciprocating roller for turning over the sheet, of an oscillating gripping mechanism located extraneously of the same for turning the leading edge of the sheet, a pivoted friction roll or rolls adjacent to the reciprocating roll and moving with the latter, and a cam for causing the friction roll or rolls to engage with the reciprocating roll so as to feed out the sheet between the two as it is turned over.

14. In a printing or other machine, the combination with a reciprocating roller for turning over the sheet, of a gripping mechanism located extraneously of the same for turning the leading edge of the sheet, a pivoted friction roll or rolls adjacent to the reciprocating roll and moving with the latter, and an adjustable cam for causing the friction roll or rolls to engage with the reciprocating roll so as to feed out the sheet between the two as it is turned over.

15. In a printing or other machine, the combination with a reciprocating roller for turning over the sheet, of an oscillating gripping mechanism located extraneously of the same for turning the leading edge of the sheet, a pivoted friction roll or rolls adjacent to the reciprocating roll and moving with the latter, and an adjustable cam for causing the friction roll or rolls to engage

with the reciprocating roll so as to feed out the sheet between the two as it is turned over.

16. In a printing or other machine, the combination of a reciprocating carriage, and oscillating means associated therewith but located extraneously thereof for turning the leading edge of a sheet, adapted to be rendered inoperative, whereby when the said turning means are operative the carriage will act to deliver the sheet with the printed side down on its forward stroke, and whereby when the turning means are inoperative the carriage will act to deliver the sheet with the printed side up on its return stroke.

17. In a printing or other machine, the combination of a reciprocating carriage, and an oscillating gripper mechanism associated therewith but located extraneously thereof for turning the leading edge of the sheet, adapted to be rendered inoperative, whereby when the said turning means are operative the leading edge of the sheet will be turned by the latter and the reciprocating carriage will act to turn over the body of the sheet and deliver it on its forward stroke with the printed side down, and whereby when the turning means are inoperative the carriage will draw out the sheet and deliver it printed side up on its return stroke.

18. In a sheet delivery mechanism, the combination of a reciprocating carrier, a shaft under the path of said carrier, and a gripping and seizing means oscillatably mounted on said shaft and having movable jaws for engaging and holding the edge of the sheet.

19. In a sheet delivery mechanism, the combination of a reciprocating carrier, a shaft under the path of said carrier, a gripping and seizing means oscillatably mounted on said shaft and having movable jaws for engaging and holding the edge of the sheet in front of the carrier, and means for rendering said gripping and seizing means inoperative.

Signed at New York this 18th day of May, 1904.

WALTER SCOTT.

Witnesses:

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ANNIE WISSEMAN.